STANDARD FORM NO. 64

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Office Memorandum • UNITED STATES GOVERNMENT

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TO : The Files

DATE: 24 April 1957

FROM : [redacted]

25X15X1

SUBJECT: Contract RD-91, Marine Crystal Vide[redacted]

1. On 18 and 19 March 1957, I visited the Government and Industrial Division of [redacted] 25X1 to monitor the status of rework being performed on the Marine Video System. Those contacted at Philco were:

[redacted]	Section Engineer
	Executive Director, Mechanical Engineering
	Director of Research
	Section Engineer

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2. As indicated in my trip report dated ~~23 April~~ 21 March 1957, the results of the field testing of the Marine Video System indicated unsatisfactory performance. The [redacted] was contacted and so advised. However, the results of the test did indicate that the system has the requisite sensitivity and a potential for useful application. Subsequent to [redacted] visit here, the [redacted] Corporation has acted to rectify the engineering errors and mistakes of the previous year's efforts. (See Progress Report, same subject, dated 17 February 1956, Par. 7).

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3. Calculations reveal the time constants of the pulse stretchers in the deflection amplifier and in the combining amplifier are about 100 times too long. Consequently, new circuits have been developed. Very serious audio interreactions occur between all channels. Variations in the output of combining amplifier boards vary by as much as 15 db. The R.F. calibrator is unreliable, and further, fails to give trace indications on all Bands. In addition, a number of other lesser electronic faults were discovered and numerous mechanical errors have been pointed out.

4. The following specific items are being accomplished:

(a) The wiring in the console structure has been completely removed and a new cable harness is being made. Multiple grounding points are being removed and electrical grounds will be made at only one point in the framework of the console.

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(b) A terminal strip is being provided in the base of the console unit from which distribution will be made to the controls on the front panel. This will eliminate approximately 60% of the wires currently terminating on switch points on the front panel, thereby reducing the possibility of switch failure.

(c) The existing calibrator system is being removed in its entirety, and a more reliable substitute method is being provided.

(d) Part of the unreliable operation of the CRT plug-in units is attributed to the printed board connector. Completely new deflection, combining, and CRT coupling boards are being made which will have the printed circuit connection on both sides of the board and should, therefore, provide a much more reliable contact with the female plug.

(e) In addition to the fabrication of new boards to improve connectors, the circuits of the deflection board and the combining amplifier have been radically changed to give better response.

(f) The pre-amplifiers on all channels are being reworked. The polarized condenser at the input of each pre-amp is being replaced with a non-polarized condenser.

(g) Adequate filtering is being provided in all circuits for elimination of audio interreaction.

(h) A higher voltage source is being applied to the pre-amplifier and to the deflection boards. Zennet reference diodes are being used in each board to give stable voltages at these critical points. This will permit stable operation over a much greater change in battery voltage.

(i) Additional batteries are being provided so that the pre-amplifiers may be operated from their own power source, thus eliminating the problem of interreaction through the primary power supply.

(j) All printed boards will be sprayed for fungus and moisture proofing with a material called "Tufon."

(k) The 1N-23B crystals will be substituted with 1N-23D crystals. The variation in output of the 1N-23D as a detector ±1 db, while the variation of a 1N-23B may be as much as ± 4 db under similar conditions. These more uniform crystals will eliminate many of the channel balance problems now existing in the various quadrants.

(l) The cable entrances at the bottom of the radome are being completely water proofed.

(m) Many of the smaller, and more minor, mechanical deficiencies are being corrected, such as adequate support for all cables, connectors and other components.

4. This rework is being approached by [redacted] on an "all out" basis. [redacted] has been given complete backing for unlimited use of engineers and technicians. A target date of 1 April has been established which will be met by [redacted] unless unknown and unforeseen events should occur. To date, many of the circuit provisions have been breadboarded and found to be completely workable. It is interesting to note that when a breadboard design is started, a draftsman will be making a printed board layout on the assumption that the circuit will work. By the time the breadboard circuit has been proven, the photo master is ready to be issued to the printed board etching department and thus within a matter of two or three hours, a completely new circuit will have been designed, tested, and built. 25X1 25X1 25X1

5. The field testing work at Chesapeake Bay Annex has been stopped, as the console in use has been returned to [redacted] This console will be used for system testing while the original console is being rewired. Testing on a boat at Chesapeake Bay Annex will be resumed later. 25X1

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